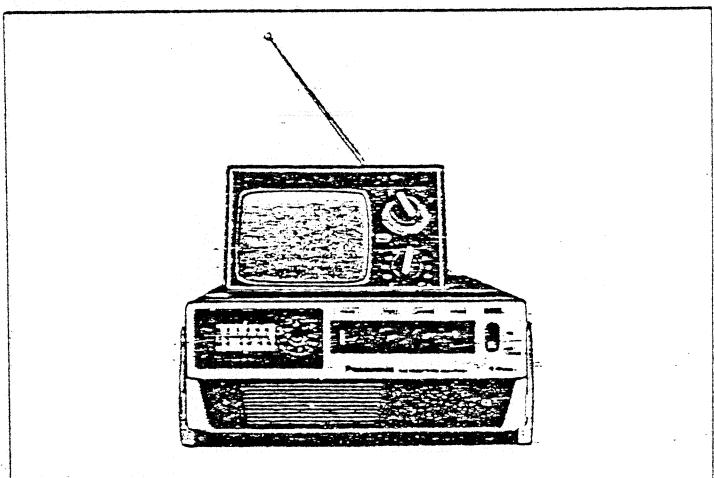


Service Manual

Black and White Television

TR-535/TR-535C

Chassis No.T506-A Main Manual



Specifications

Power Source:	AC: 120V 60Hz	DC: 12V	IC:	5
Power Consumption:	AC: 20W	DC: 6W	Picture Tube:	Type 140AKB4
Antenna:	UHF/VHF Monopole antenna 75 Ohm Unbalanced type.			13 square inches
Receiving Channels:	VHF and UHF External antenna 300 Ohm Balanced type			55° Deflection.
TV	VHF 2ch-13ch USA Standard			3-1/2" Round type
Radio	UHF 14ch-83ch - USA Standard			Max. 360mW
	FM 88 ~ 106 MHz			Keyed AGC
	AM 530 ~ 1650 MHz			(Automatic Gain Control)
Intermediate Frequency:	Video: 45.75 MHz			Saw-Tooth AFC
	Sound: 41.25 MHz			(Automatic Frequency Control)
Stages:	Video: I-F: 3			AVR (Automatic Voltage Regulator)
	Sound: I-F: 1(IC)			ACP (Automatic Charge Protector)
Transistors:	25			ADP (Automatic Discharge Protector)
Diodes:	21			
High Voltage:	7.2 kV (Brightness & Contrast are MIN)		Dimensions:	Height: 5-1/2 inches
				Width: 12-1/2 inches
				Depth: 14 inches
			Weight:	15-1/5 lbs
				With Panalloid Batteries

Panasonic®

Matsushita Electric Corp. of America
50 Meadowland Parkway Secaucus,
New Jersey 07094

Matsushita Electric of Hawaii, Inc.
320 Waikamilo Road, Honolulu, Hawaii 96817

Matsushita Electric of Canada Ltd.
40 Ronson Drive, Rexdale, Ont.

ORDER NO. 7505-007

CAUTION

The high voltage supply at the picture tube anode will give an unpleasant shock, but does not supply enough current to give a fatal burn or shock. However, secondary human reaction to otherwise harmless shocks have been known to cause injury. Always discharge the picture tube anode to the receiver chassis before handling the tube. Certain portions of the high voltage generating circuit are dangerous and extreme caution should be observed. The picture tube is highly evacuated and, if broken, glass fragments will be violently expelled.

WHEN HANDLING THE PICTURE TUBE, ALWAYS WEAR GOGGLES AND PROTECTIVE CLOTHING.

CONTROL LOCATION

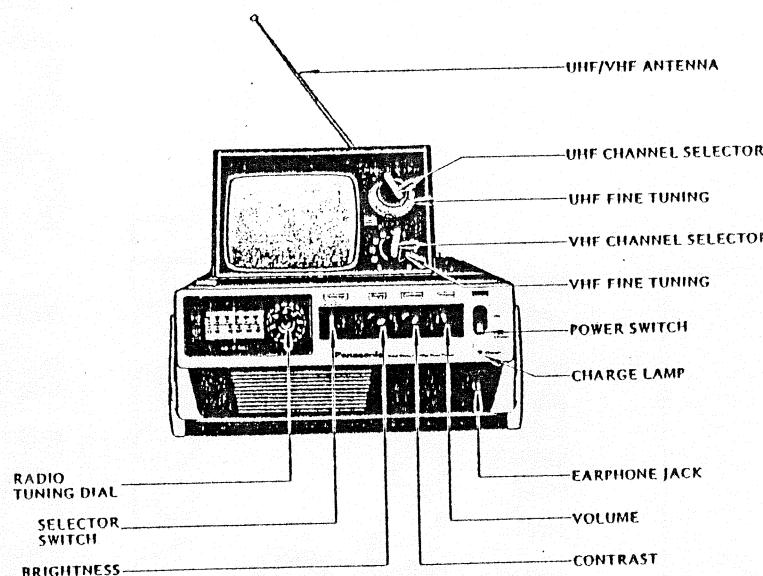


Fig. 1

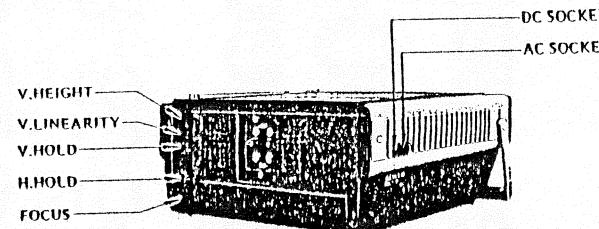


Fig. 2

ADJUSTMENTS

VERTICAL HEIGHT AND VERTICAL LINEARITY (Fig. 2)

(1) These controls (VR32 and VR33) should be adjusted at the same time to give proper vertical size consistent with good vertical linearity. The adjustment should be made to extend the picture limits approximately $3/16"$ (5 mm) beyond the top and bottom edges of the mask.

AGC (AUTOMATIC GAIN CONTROL)

The adjustment of the AGC control effectively changes the operating point of the AGC amplifier. Turn the control fully clockwise to set for maximum gain. In some areas this may cause clipping of the sync pulses, resulting in a wobble in the picture and unstable sync. Turning the AGC control in a counterclockwise direction will decrease the wobble of the receiver and diminish the wobble.

TO ADJUST THE AGC PROPERLY (Fig. 3)

- (1) Set the channel selector to a station transmitting a strong signal.
- (2) Set the R-F AGC control VR 19 to the center position.
- (3) Turn the I-F AGC control VR 18 fully counterclockwise, and the contrast and brightness controls fully clockwise.
- (4) Adjust the I-F AGC control VR 18 to obtain a sharp and clear picture. If I-F AGC control VR 18 is turned fully clockwise, the input signal strength will be maximum.
- (5) Observing the input signal, turn the R-F AGC control VR 19 clockwise or counterclockwise to the point where the noise disappears in the picture.
- (6) Check the reception on all channels. There should be no wiggling. Make certain the picture does not disappear when the contrast control is turned to minimum.
- (7) Readjust AGC control slightly, if necessary. In very strong signal areas, where slight sync clipping is still evident, shorten antenna length or use a pad with an outside antenna to reduce signal input.

YODE POSITION (Fig. 5)

The yoke is secured to the neck of the picture tube with an angular clamp and screw. To adjust the yoke and correct for picture tilt, loosen this clamp. Correct tilt and retighten the screw.

CENTERING (Fig. 5)

The picture centering device consists of two rings located at the rear of the yoke assembly. Each ring has a tab for adjustment. The tabs should be rotated and moved towards or away from each other until the picture is properly centered on the screen of the picture tube.

FOCUS (Fig. 2)

Adjust the focus control (VR64) for the sharpest and clearest picture.

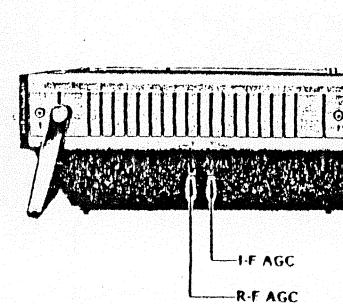


Fig. 3

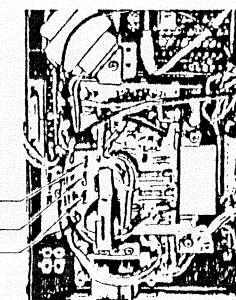


Fig. 4

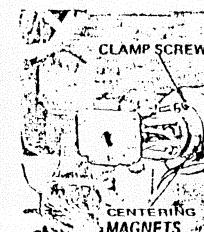


Fig. 5

DISASSEMBLY INSTRUCTIONS

Upper Cabinet Removal

1. Remove 5 mounting screws (A) shown in Fig.6 and Fig.7.

POP-UP Block Removal

1. Remove the upper cabinet.
2. Remove 4 screws (B) shown in Fig.8.
3. Picture Tube: Remove 4 screws (C) shown in Fig.9.
4. Tuner Block: Remove 3 screws (D) shown in Fig.9.

Radio Block Removal

1. Remove the upper cabinet, 3 connectors and the picture tube Barrier as shown in Fig.10.
2. Pull off the selector switch knob and the radio tuning dial.
3. Remove 2 screws (E) shown in Fig.12.

Volume Block Removal

1. Remove the upper cabinet and the radio block.
2. Remove 2 screws (F) shown in Fig.11.

Speaker and Power switch Removal

1. Remove the upper cabinet and the volume block.
2. Remove 2 screws (G) shown in Fig.12.

Main Circuit Board Removal

1. Remove the upper cabinet.
2. Pull off the V.Hold knob and H.Hold knob.
3. Remove a screw (H) shown in Fig.11.
4. Pull the main circuit board upward.

Power Circuit Board Removal

1. Remove the upper cabinet and the PUP-UP block.
2. Remove a screws (I) and 4 screws (J) shown in Fig.13 and Fig.11

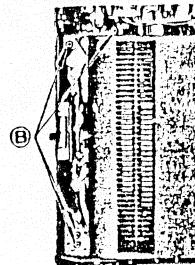


Fig. 8

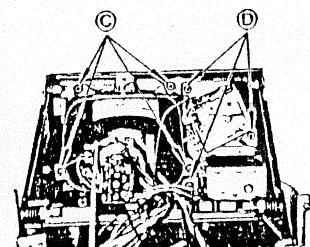


Fig. 9

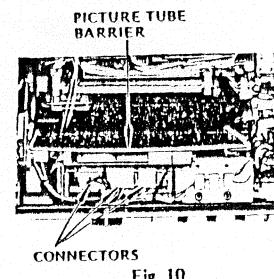


Fig. 10

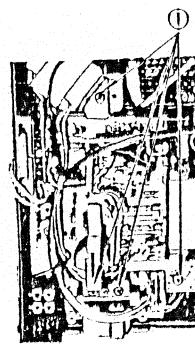


Fig. 11

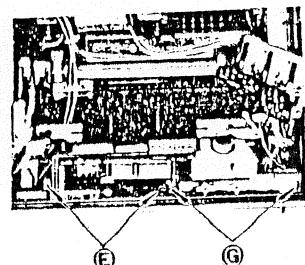
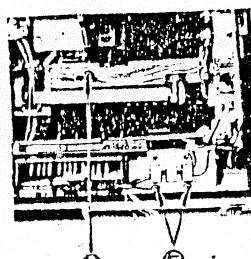


Fig. 13

VIDEO I-F ALIGNMENT

PREPARATION

1. Sweep & marker generator, oscilloscope and DC power supply Connect and set as shown in Fig. 14
2. Connect the jamper lead between TP14 and TP15 as shown in Fig. 14

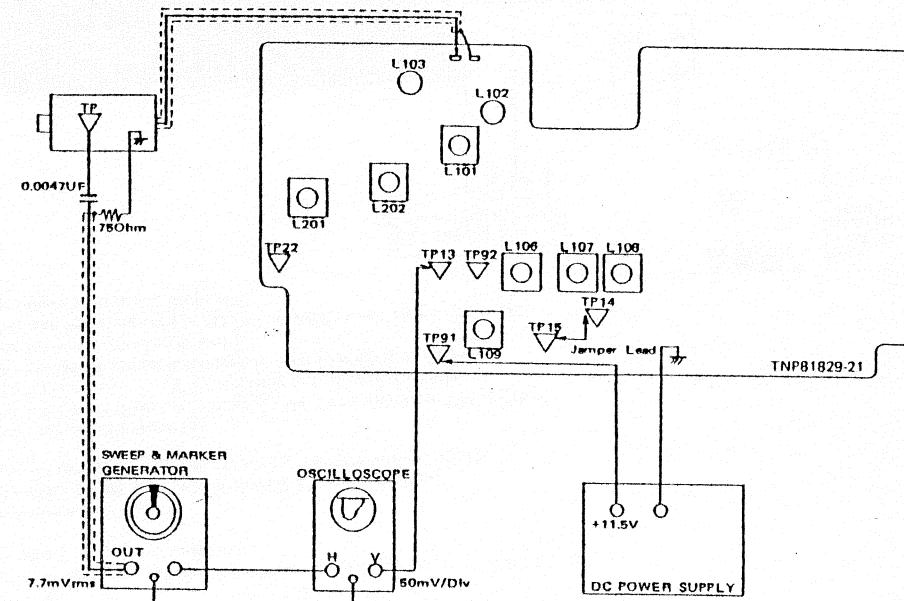


Fig. 14

ALIGNMENT PROCEDURE

STEP	ALIGNMENT	WAVEFORM
1	Adjust L103 for the 41.25MHz marker position to fall shown in Fig.15.	
2	Adjust L102 for the 47.25MHz marker position to fall shown in Fig.15.	
3	Adjust both L101 and tuner convertor coil to obtain the correct response curve shown in Fig.15.	

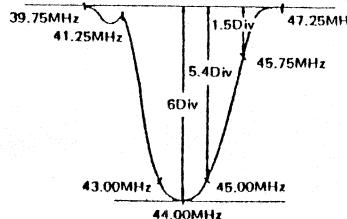


Fig. 15

-SOUND I-F ALIGNMENT

PREPARATION

PREPARATION

1. Set the power switch to "ON" position.
2. Turn the volume fully counterclockwise.
3. Sweep & Marker generator and oscilloscope--connect and set shown in Fig.16.
4. Connect the jumper lead between S2 and TP23 as shown in Fig.16.

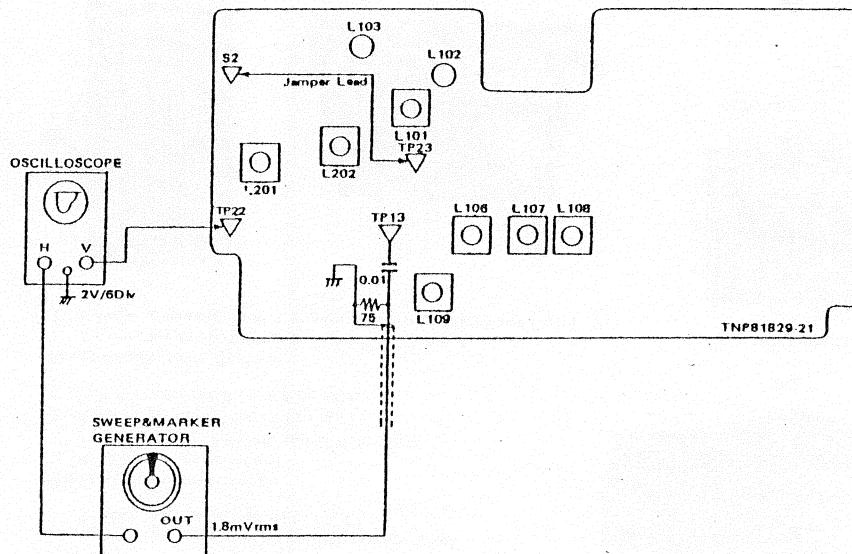
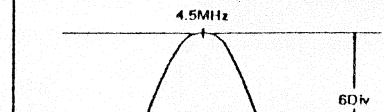
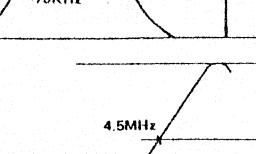


Fig. 10

ALIGNMENT PROCEDURE

STEP	ALIGNMENT	WAVEFORM
1	Adjust L202 to get the V curve shown in Fig.17 and adjust L201 to the maximum gain at 4.5MHz shown in Fig.17.	 <p>Fig.17</p>
2	Adjust L202 until the 4.5MHz marker is the center of slanted line shown in Fig.18.	 <p>Fig.18</p>

—AVR, ACP, ADP ADJUSTMENT

CONNECTIONS

Connect as shown in Fig. 19.

PREPARATION

1. Turn the VR71 fully counterclockwise.
2. Turn the VR72 and VR73 fully clockwise.

A. ACP circuit alignment procedures

1. Set the SW-1 and the SW-2 to ON position, and set the SW701 and the SW702 to OFF position.
2. Adjust the DC power supply voltage indicating V1 meter to the value which it indicates Fig.20 (Be sure to check the temperature. The voltage is changed by the temperature.)
3. Turn the VR72 clockwise and set the point where the charge lamp has started illuminating.
4. Confirm the operating voltage of ADP circuit shown in Fig.20 by rising the DC power supply voltage and dropping it.

B. AVR adjustment procedure

1. Set the SW-1 to ON position and the SW-2 to OFF position.
2. Set the V1 voltage to 11.5V by adjusting the AVR control VR71.

C. APP circuit adjustment procedure

1. Set the SW-1 to OFF and set the SW-2, SW-3 and SW702 to ON position.
2. Set the V1 voltage to 11.0V by adjusting the DC power supply.
3. Set the point where the A1 ammeter has started swinging to zero by turning the VR72 counterclockwise.
4. Confirm the operating voltage (11.0V) of ADP circuit by rising the DC power supply voltage and dropping it.

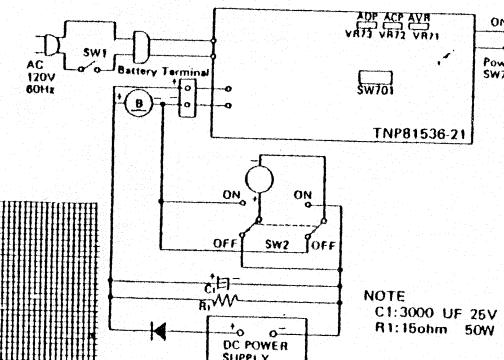


Fig. 1

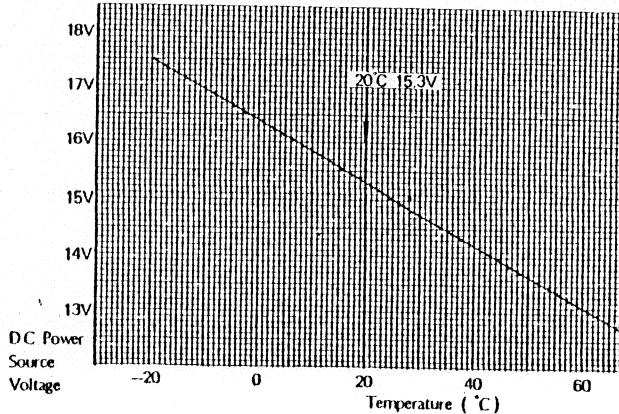
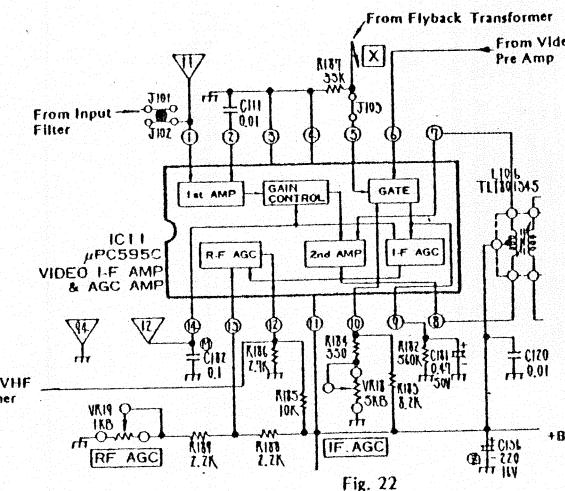


Fig. 20

NEW CIRCUIT EXPLANATION

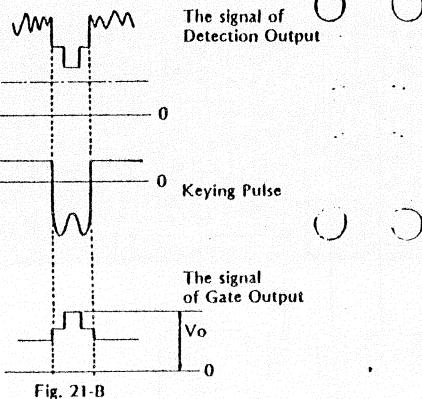
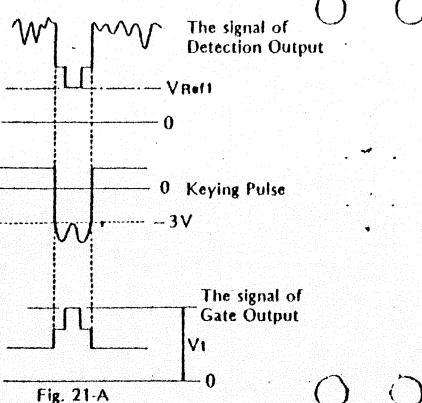
VIDEO I-F AMPLIFIER & AGC CIRCUIT (IC11 μ PC595C)

- (1) The tuner output is coupled through input filter to terminal pin No.1 of IC 11.
- (2) In the IC, the output from the input filter is amplified through the first amplifier stage and is then coupled to the gain control circuit, the output of which is further amplified and supplied to the succeeding stage filter.
- (3) Meanwhile, control signal from the I-F AGC amplifier is coupled to the gain control circuit; this control signal controls the gain of the video amplifier to stabilize the video amplifier output, that is, detection output.
- (4) The output of the I-F AGC amplifier is also coupled to the R-F AGC amplifier for comparison with a reference voltage VREF1 applied to IC terminal pin No. 13. The R-F AGC amplifier has a delayed AGC function and supplies AGC bias from terminal pin No. 12 of IC to the VHF tuner.
- (5) The gate circuit operates as keyed AGC. The detection output is coupled to IC terminal pin No.6, reference voltage VREF1 to terminal pin No.10, and keying pulse signal to terminal pin No.5, these signals being related as shown in Fig.21. The output of the gate circuit is provided only during the presence of a keying pulse, and its level according to the level of the detection output, as shown in Figs. 21-A and B, the level is reduced with decreasing detection output.
- (6) The gate circuit output is rectified through diode within the IC and filter connected to IC pin No.9, and the rectified output is applied to the I-F AGC amplifier. The amplified voltage output from the I-F AGC amplifier is applied to the gain control circuit for controlling the gain of the I-F amplifier.
- (7) Since the I-F signal from the input filter is amplified before it is coupled to the gain control, application of AGC voltage will not result in variation of the picture quality.

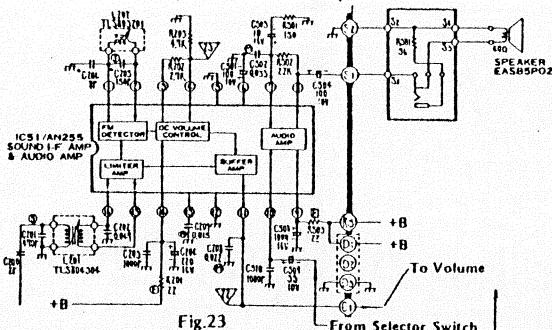


SOUND DETECTOR & AUDIO AMPLIFIER CIRCUIT (IC 51 AN255)

- (1) The sound I-F signal from C200 is coupled through the input filter consisting of L201 and C201 to terminal pins No.15 and No.16 of IC 51.
- (2) The coupled signal is amplitude-limited by the limiter amplifier to a constant amplitude, and then it is fed to the FM detector and resonant circuit consisting of C205, L202 and C206.
- (3) The output of the resonant circuit, phase shifted from its input, is coupled to the FM detector.
- (4) In the FM detector the difference between its two inputs is taken to produce low-frequency output.
- (5) The low-frequency detected signal is led to the D-C volume control circuit.
- (6) Here, the detected output is reduced to the same level as the radio output through R202 and R203 (the detected output level being increased by reducing the voltage on terminal pin No.4 of IC 51).

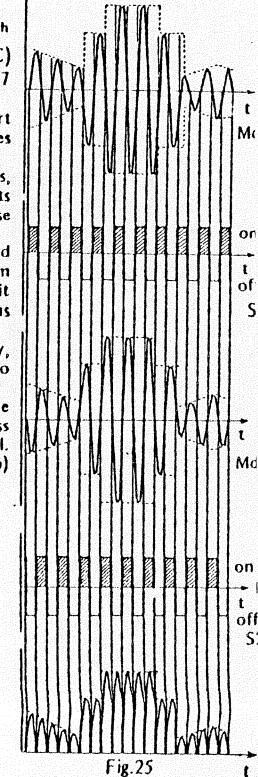
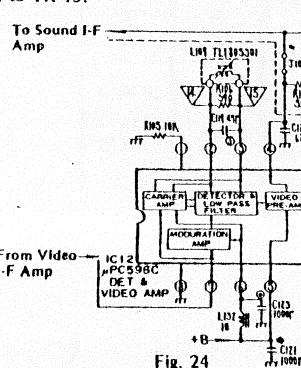


- (7) The detected output having been reduced to the same level as radio output through the D-C volume control circuit is applied to the buffer amplifier, the output of which is coupled to IC terminal pin No.11 for quality adjustment through C208 cutting off high frequency components.
- (8) The resultant output is coupled to VR51 for volume control before being coupled to the audio amplifier.
- (9) The audio amplifier is a negative feedback amplifier and reduces distortions. The magnitude of the negative feedback is determined by the resistances of R502 and R501; by reducing the resistance of R501 the negative feedback is reduced to increase the gain of the audio amplifier.



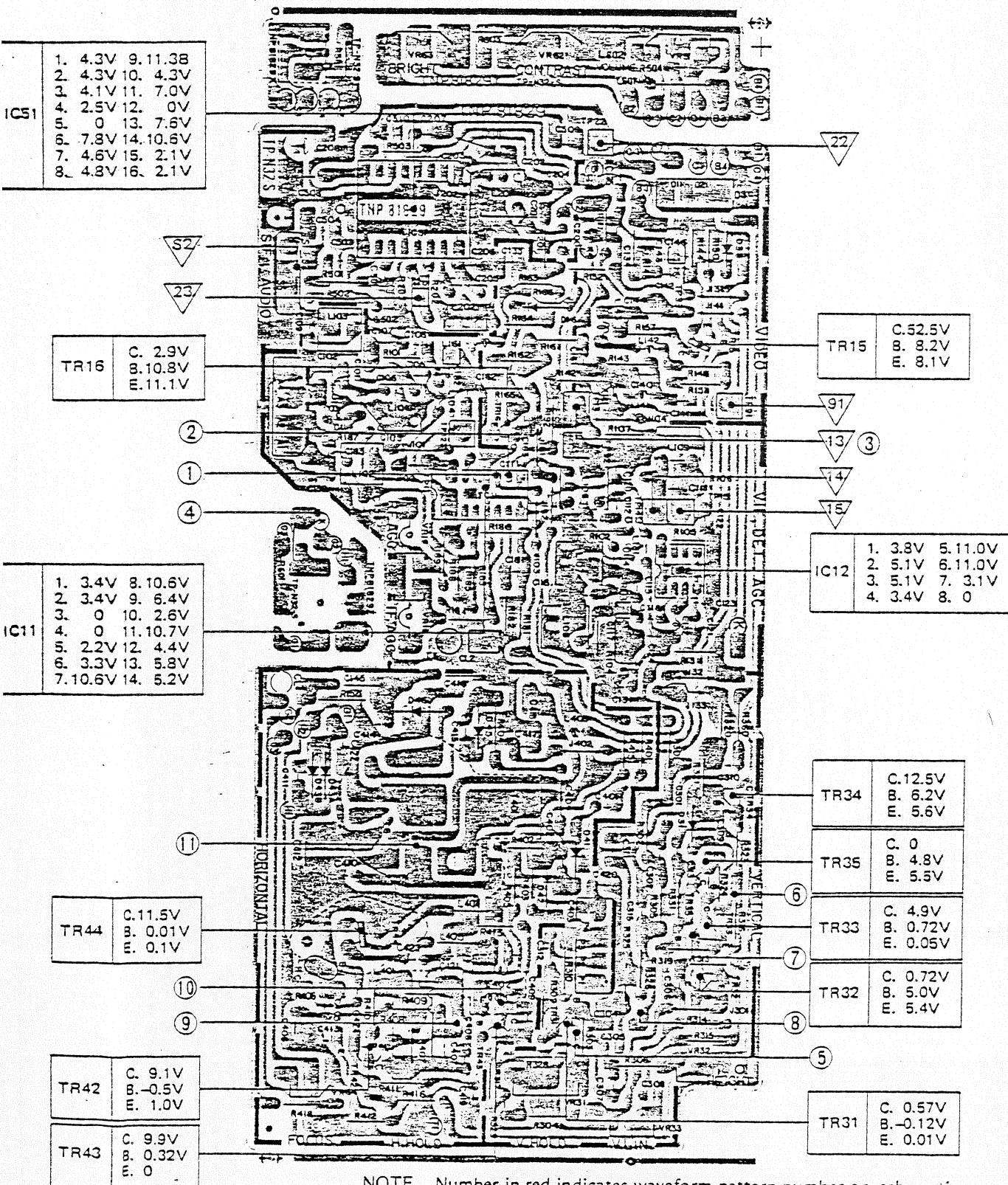
VIDEO DETECTOR & VIDEO AMPLIFIER CIRCUIT (IC 12 μ PC 569C)

- (1) The output from IC 11 is coupled through interstage filter to terminal pin No.7 of IC 12.
- (2) The interstage filter has a triple tuning construction providing an improved skirt characteristic over the conventional circuit in order to cope with disturbances by signals outside the necessary band.
- (3) In IC 12 the input is coupled through two separate paths. In one of these paths, it is directly amplified to provide inputs to the synchronous detector (the inputs Md1 and Md2, as shown in Figs. 25-A and C, being 180 degrees out of phase from each other).
- (4) In the other path, the input is led to the carrier amplifier for limiting, and video subcarrier signals S1 and S2 (which are 180 degrees out of phase from each other as shown in Figs. 25-B and D) are derived from the resonant circuit consisting of L109 and C119 and coupled as switching signal to the synchronous detector.
- (5) The inputs Md1 and Md2 are switched in synchronism to the subcarrier frequency, and only when the switching signal is positive the modulated wave is allowed to appear at the output of the detector (as shown in Fig. 25-E).
- (6) The detector output thus consists of half-cycle modulated signal portions of like polarity. The half-cycle modulated wave portions are passed through the low-pass filter to demodulate the envelope of the modulated wave, i.e., modulated signal.
- (7) The demodulated signal is amplified by the video pre-amplifier (of about 12 db) before being coupled to TR 15.



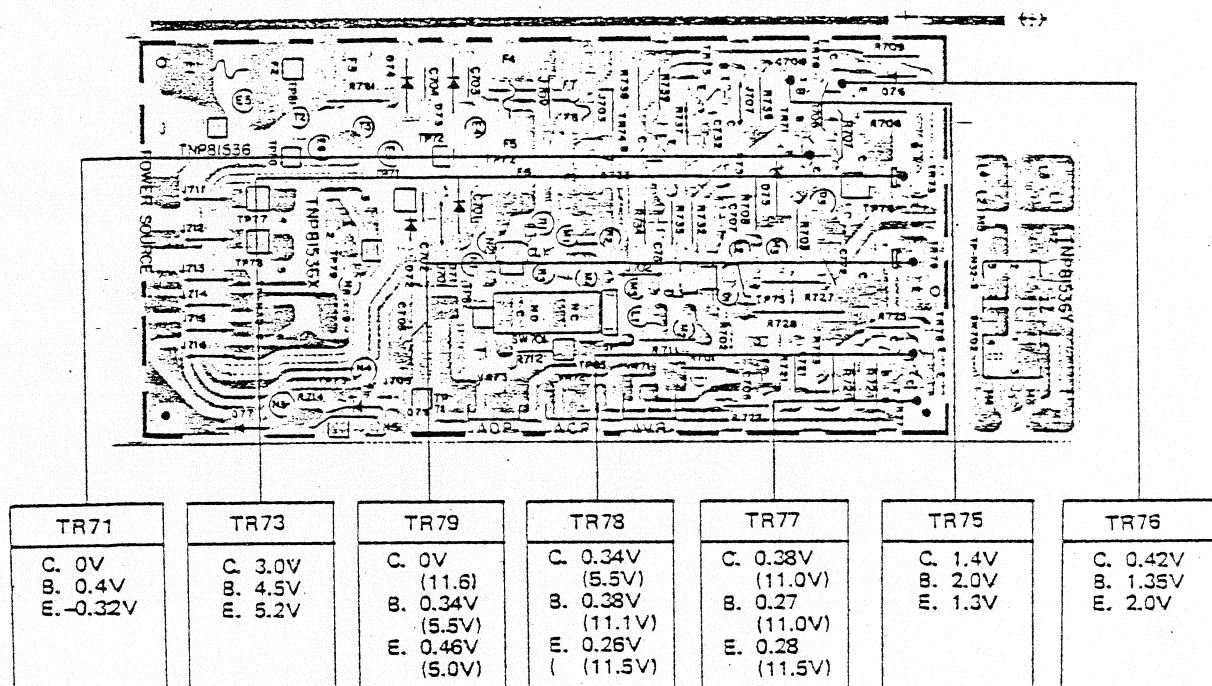
MAIN CIRCUIT BOARD

CONDUCTOR VIEW (TNP81829-21)



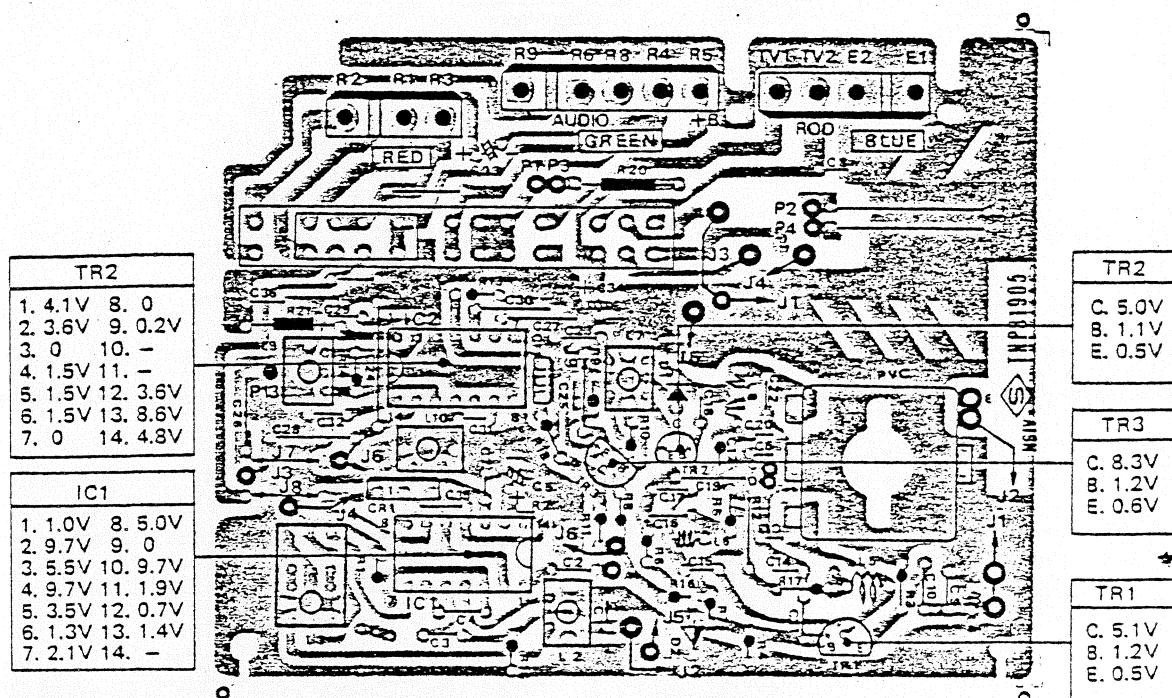
CIRCUIT BOARD

POWER SOURCE CIRCUIT BOARD CONDUCTOR VIEW (TNP81536-21S)

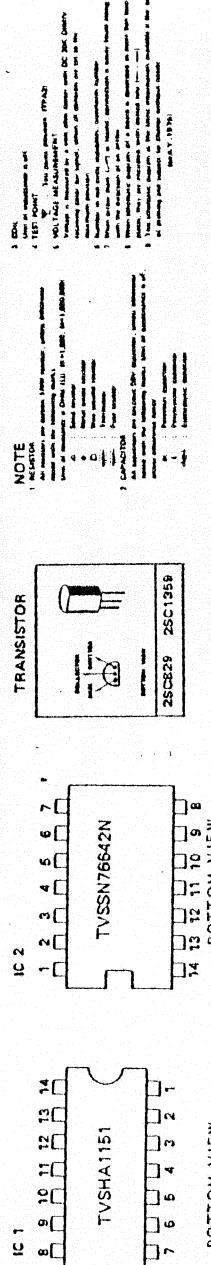
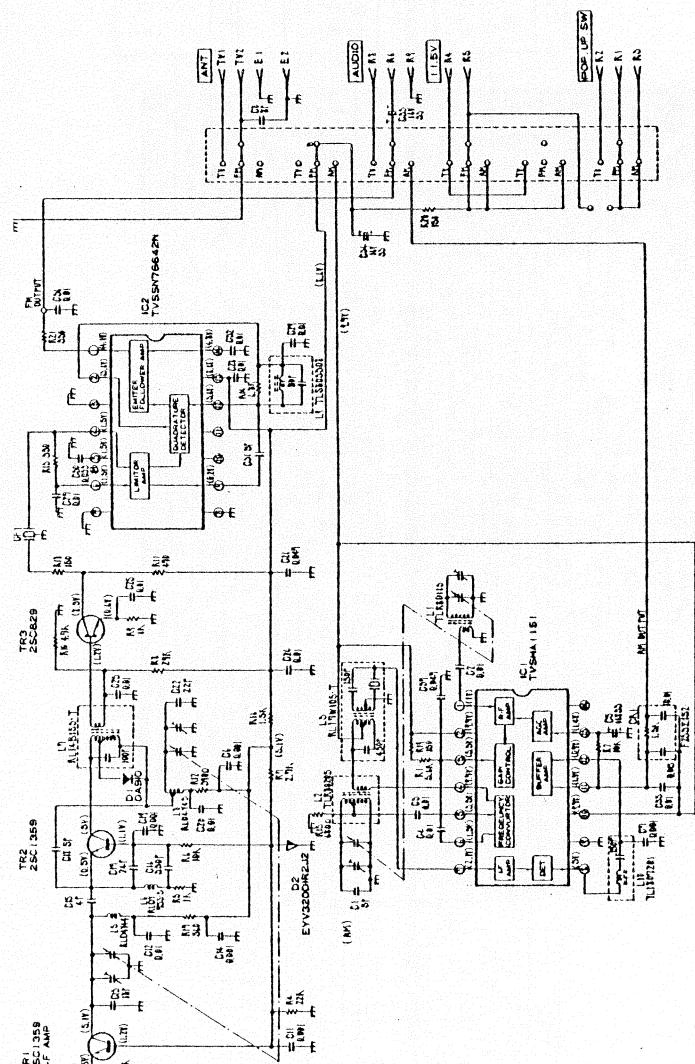


NOTE. The voltage in parenthesis is measured, when the power switch is set to "off" position.

RADIO CIRCUIT BOARD CONDUCTOR VIEW (TNQ8215)



RADIO SCHEMATIC DIAGRAM



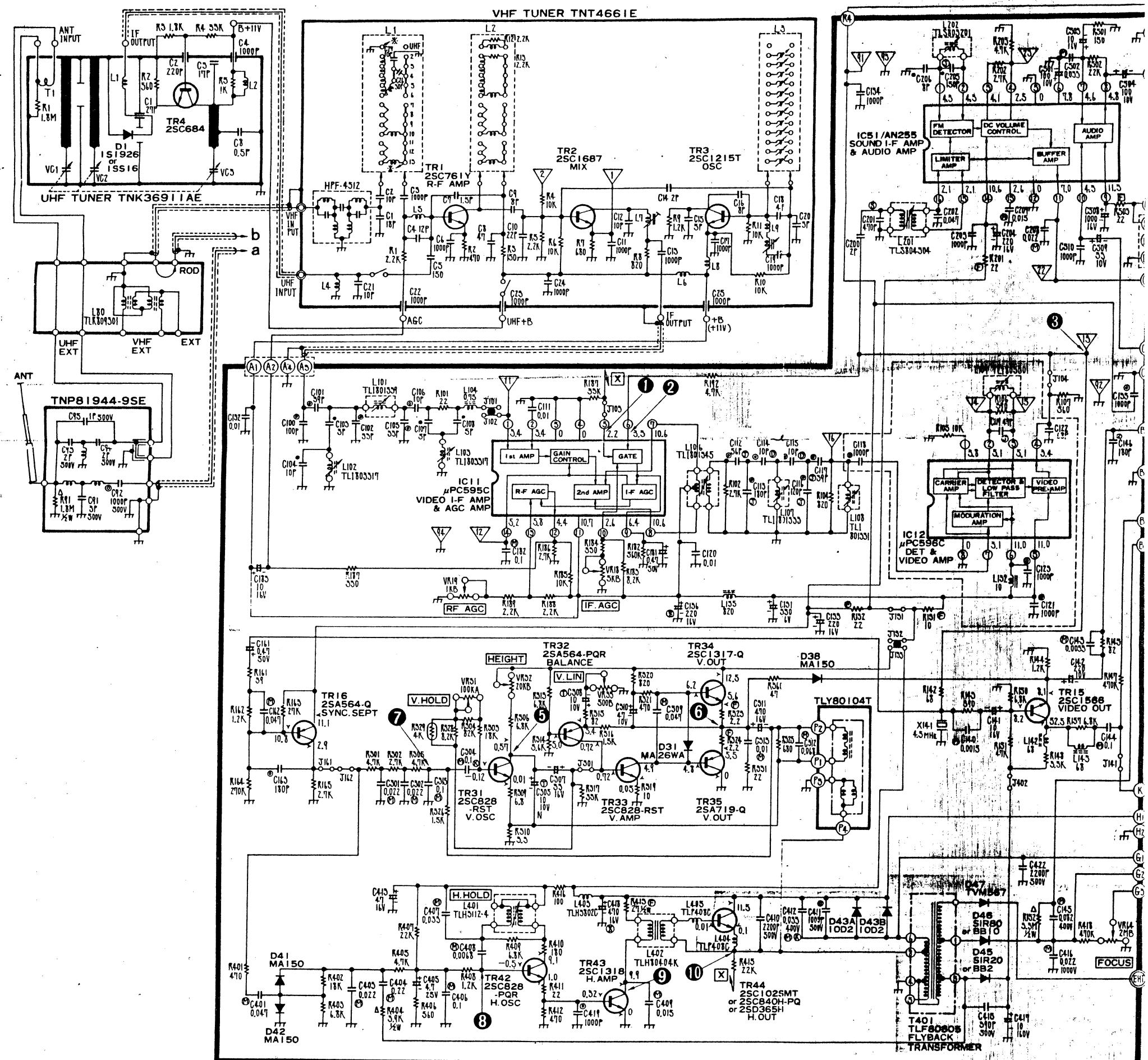
REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION	REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION
TNQ8215 RADIO BOARD					
A'SSY PARTS					
R-1	TKKB00372	Dial Film Complete	C1	ECCD1H050CC	Ceramic 4PF +0.25PF-0.25PF 50V
R-2	TSEB0305	Selector Switch	C2	ECCD1H103PF	Ceramic 0.01UF +100%-0% 50V
R-3	RDT9056A	Tuning Shaft	C3	ECCD1H103PF	Ceramic 0.01UF +100%-0% 50V
R-4	RME11D	Tuning Shaft Stopper	C4	ECCD1H103PF	Ceramic 0.01UF +100%-0% 50V
R-5	RDD310A	Poly Variable Capacitor Drum	C5	ECEA16V33L	Electrolytic 33UF 16V
R-6	RDS4060A	Thread Spring	C6	ECKD1H102KB	Ceramic 1000PF +10%-10% 50V
R-7	RDR13	Guide Roller	C7	ECKD1H102KB	Ceramic 1000PF +10%-10% 50V
R-8	RDR14	Guide Roller	C8	ECKD1H1080KB	Ceramic 8PF +10%-10% 50V
R-9	RDR21	Guide Roller	C9	ECCD1H1470KC	Ceramic 47PF +10%-10% 50V
R-10	RDY31A	Roller Stay	C10	ECCD1H101K	Ceramic 100PF +10%-10% 50V
R-11	RNW230A	Roller Stopper	C11	ECCD1H102KB	Ceramic 1000PF +10%-10% 50V
R-12	RDF7A	Dial Roller	C12	ECCD1H102KB	Ceramic 1000PF +10%-10% 50V
R-13	RUS108A	Spread Spring	C13	ECCD1H1811JC	Ceramic 180PF +5%-5% 50V
R-14	RDS07-4	Rope	C14	ECCD1H102KB	Ceramic 1000PF +10%-10% 50V
R-15	PVC2LX20T-3M	Poly Variable Capacitor	C15	ECCD1H1040C	Ceramic 4PF +0.25PF-0.25PF 50V
ICS					
IC1	TVSHAI151	AM Radio	C16	ECKD2H331KB	Ceramic 330PF +10%-10% 500V
IC2	TVSSN76642N	Limiter, FM Det.	C17	ECCD1H240JC	Ceramic 24PF +5%-5% 50V
TRANSISTORS					
TR1	2SC1359A	RF	C18	ECCD1H050CC	Ceramic 5PF +0.25PF-0.25PF 50V
TR2	2SC1359A	Convector	C19	ECCD1H102KB	Ceramic 1000PF +10%-10% 50V
TR3	2SC829B	Sound I-F	C20	ECKD1H1032F	Ceramic 0.01UF +80%-20% 50V
DIODES					
D1	O90	Limiter	C22	ECCD1H240JC	Ceramic 24PF +5%-5% 50V
D2	EYV320D1R2JA	Voltage Stabilizer	C23	ECCD1H103PF	Ceramic 0.01UF +100%-0% 50V
COILS & TRANSFORMERS					
L1	TLR80113	AM Antenna Coil	C24	ECCD1H103KB	Ceramic 0.01UF +100%-10% 50V
L2	TLR80205	AM OSC Coll	C25	ECCD1H103PF	Ceramic 0.01UF +100%-0% 50V
L3	RL17W105Q-T	455KHz Combination Filter	C26	ECCD1H4732F	Ceramic 0.047UF +80%-20% 50V
L4	RLQY155-5	FM Peak Coll	C27	ECCD1H103KB	Ceramic 0.01UF +10%-10% 50V
L5	RLDY44	FM R-F Coll	C28	ECCD1H103KB	Ceramic 0.01UF +100%-0% 50V
L6	RLQY755-5	FM Peak Coll	C29	ECCD1H103PF	Ceramic 0.01UF +100%-20% 50V
L7	RL14B153-T	FM I-F Trans.	C30	EQMOS5333MZ	Polyester 0.033UF +20%-20% 50V
L8	RLQY43	FM OSC Coll	C31	ECCD1H1501C	Ceramic 15PF +5%-5% 50V
L9	TL5803308	FM I-F Trans	C32	ECCD1H103PF	Ceramic 0.01UF +100%-0% 50V
L10	TL1807201	AM I-F Trans	C33	ECEA16V33L	Electrolytic 33UF 16V
RESISTORS					
R1	ERD14VJ562	Carbon 5.6KOhm +5%-5% 1W	C34	ECEA16V33L	Electrolytic 33UF 16V
R2	ERD14VJ103	Carbon 10KOhm +5%-5% 1W	C35	ECKD1H103KB	Ceramic 0.01UF +10%-10% 50V
R3	ERD14VJ222	Carbon 2.2KOhm +5%-5% 1W	C36	ECCD1H103PF	Ceramic 0.01UF +10%-10% 50V
R4	ERD14VJ223	Carbon 22KOhm +5%-5% 1W	C37	ECKD1H4732F	Ceramic 0.047UF +80%-20% 50V
R5	ERD14VJ102	Carbon 1KOhm +5%-5% 1W	C-R COMBINATION		
R6	ERD14VJ103	Carbon 10KOhm +5%-5% 1W	CR1	EXAF2S32152	Combination Resistor
R7	ERD14VJ222	Carbon 2.7KOhm +5%-5% 1W	CF1	TFC1A0R7A	10.7 Filter
R8	ERD14VJ223	Carbon 22KOhm +5%-5% 1W	BRACKETS		
R9	ERD14VJ102	Carbon 1KOhm +5%-5% 1W	R-16	TKK809816	Radio Complete Mounting Bracket
R10	ERD14VJ472	Carbon 4.7KOhm +5%-5% 1W	R-17	TKK809827	Slide Switch Mounting Bracket
TNP81829-21 MAIN CIRCUIT BOARD			R-18	TUC80927	Shield Plate
IC					
IC11	TVSMPG595C	Video I-F	TRANSISTORS		
IC12	TVSMPG596C	Video Detector	TR15	2SC1566	Video Output
IC51	AN255	Sound I-F	TR16	2SA564A	Sync. Sep.
TRANSISTORS			TR31	2SC828A	Vert. Switching
TR15	2SC1566	Video Output	TR32	2SA564A	Vert. Stability
TR16	2SA564A	Sync. Sep.	TR33	2SC828A	Vert. Drive
TR31	2SC828A	Vert. Switching	IC		
TR32	2SA564A	Vert. Stability	IC11	TVSMPG595C	Video I-F
TR33	2SC828A	Vert. Drive	IC12	TVSMPG596C	Video Detector
TR34	2SC1317	Vert. Output	IC51	AN255	Sound I-F
TR35	2SA719	Vert. Output	IC		

REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION	REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION
TR42	2SC828A	Horiz. Osc.	C141	ECEA16V10L	Electrolytic 10UF 16V
TR43	2SC1318	Horiz. Drive	C142	ECEA10V220L	Electrolytic 220UF 10V
TR44	2SC1025MT	Horiz. Output	C143	ECOM05332KZ	Polyester 3300PF +10% -10% 50V
		DIODES	C144	ECOM05104MZ	Polyester 0.1UF +20% -20% 50V
			C145	EQM04823MZ	Polyester 0.082UF +20% -20% 40V
D31	MA26WA	Vert. Bias	C146	ECCDIH181K	Ceramic 180PF +10% -10% 50V
D38	MA150	Vert. Blanking	C161	ECEA50Z47M	Electrolytic 47UF 50V
D41	MA150	Horiz. AFC	C162	EQM05473MZ	Polyester 0.047UF +20% -20% 50V
D42	MA150	Horiz. AFC	C163	ECCDIH181K	Ceramic 180PF +10% -10% 50V
D43A	TVS10D2	Damper	C181	ECEA50Z47M	Electrolytic 47UF 50V
D43B	TVS10D2		C182	EQM05101MZ	Polyester 0.1UF +20% -20% 50V
D45	TVSS1R20	Damper	C183	ECEA16V10L	Electrolytic 10UF 16V
D46	TVSS1R80	Video Rectifier	C200	ECDI100200C	Ceramic 2PF +0.25PF -0.25PF 50V
D47	TVMS67	Focus Rectifier	C201	EQS1471K	Styrol 470UF +10% -10% 100V
		High Rectifier	C202	ECDI1H473Z	Ceramic 0.047UF +20% -20% 50V
		COILS	C203	ECDI1H102MB	Ceramic 1000UF +20% -20% 50V
L101	TL1801339	Video I-F Coll	C204	ECEA16V220L	Electrolytic 220UF 16V
L102	TL1803317	Self Sound Trap	C205	ECDI1H151J	Ceramic 150PF +5% -5% 50V
L103	TL1803317	Adjustment Sound Trap	C206	ECDI1H080CC	Ceramic 8PF +0.25PF -0.25PF 50V
L104	TLTR7-999	Fixed Input Coll	C207	EQM05153MZ	Polyester 0.015UF +20% -20% 50V
L106	TL1801345	Coupling Coll	C208	EQM05223MZ	Polyester 0.015UF +20% -20% 50V
L107	TL1801333	Coupling Coll	C301	EQM05223MZ	Polyester 0.022UF +20% -20% 50V
L108	TL1801331	Coupling Coll	C302	EQM05223MZ	Polyester 0.022UF +20% -20% 50V
L109	TL1805301	Video Det. Coll	C304	EQM05104KZ	Polyester 0.1UF +10% -10% 50V
L131	TLT821-999	Filter Choke Coll	C305	ECS210EF10N	Electrolytic 10UF 10V
L132	TLT100-999	Filter Choke Coll	C307	ECEA16V33L	Electrolytic 33UF 16V
L142	TLT680-999	Peaking Coll	C308	ECS210EF10N	Electrolytic 10UF 10V
L143	TLT680-999	Peaking Coll	C309	EQM05473MZ	Polyester 0.047UF +20% -20% 50V
L201	TL803404	Sound I-F Input Coll	C310	ECEA10V47LE	Electrolytic 47UF 10V
L202	TL803201	Sound Det. Coll	C311	ECEA16V470L	Electrolytic 470UF 10V
L401	TLH3112-4	Horiz. Hold	C312	EQM05683MZ	Polyester 0.068UF +20% -20% 50V
L402	TLF80805	Flyback Transformer	C313	EQM05103MZ	Polyester 0.01UF +20% -20% 50V
L403	TLH80404K	Horiz. Drive	C315	EQM05104MZ	Polyester 0.1UF +20% -20% 50V
L404	TLH3802C	Filter Choke Coll	C401	EQM05473MZ	Polyester 0.047UF +20% -20% 50V
L405	TLPA08C	Choke Coll	C403	EQM05223MZ	Polyester 0.022UF +20% -20% 50V
L601	TLPA08C	Choke Coll	C404	EQM05224MZ	Polyester 0.022UF +20% -20% 50V
		CAPACITORS	C405	ECEA25V4R7L	Electrolytic 4.7UF 25V
C100	ECDI1H101K	Ceramic 100PF +10% -10% 50V	C406	EQM05104MZ	Polyester 0.1UF +20% -20% 50V
C101	ECDI1H1390K	Ceramic 39PF +10% -10% 50V	C407	EQM05333JZ	Polyester 0.033UF +5% -5% 50V
C102	ECDI1H330K	Ceramic 33PF +10% -10% 50V	C408	EQM05682KZ	Polyester 6800PF +10% -10% 50V
C103	ECDI1H030K	Ceramic 3PF +10% -10% 50V	C409	EQM05153MZ	Polyester 0.015UF +20% -20% 50V
C104	ECDI1H100D	Ceramic 10PF +0.5PF -0.5PF 50V	C410	ECDI2H222MD	Ceramic 2200PF +20% -20% 500V
C105	ECDI1H330K	Ceramic 33PF +10% -10% 50V	C411	ECDI2H102MB	Ceramic 1000PF +20% -20% 500V
C106	ECDI1H100D	Ceramic 10PF +0.5PF -0.5PF 50V	C412	EQM04333KZ	Polyester 0.033UF +10% -10% 10V
C107	ECDI1H050CC	Ceramic SPF +0.25PF -0.25PF 50V	C413	ECEA16V47L	Electrolytic 47UF 16V
C108	ECDI1H050CC	Ceramic SPF +0.25PF -0.25PF 50V	C415	ECDI2H391KB	Ceramic 390PF +10% -10% 500V
C111	ECKW1H103PF	0.01UF +100% -0% 50V	C416	EQE10223MZ	Polyester 0.022UF +20% -20% 10V
C112	ECDI1H560J	Ceramic 56PF +5% -5% 50V	C417	ECEA160V10	Electrolytic 10UF 160V
C113	ECDI1H181J	Ceramic 180PF +5% -5% 50V	C418	ECEA162470	Electrolytic 470UF 16V
C114	ECDI1H100D	Ceramic 10PF +0.5PF -0.5PF 50V	C419	ECDI1H102MB	Ceramic 1000PF +20% -20% 50V
C115	ECDI1H100D	Ceramic 10PF +0.5PF -0.5PF 50V	C422	ECDI2H222MD	Ceramic 2200PF +20% -20% 500V
C116	ECDI1H121J	Ceramic 120PF +5% -5% 50V	C501	ECEA10V100L	Electrolytic 100UF 10V
C117	ECDI1H390J	Ceramic 39PF +5% -5% 50V	C502	EQM05333MZ	Polyester 0.033UF +20% -20% 50V
C118	ECDI1H102MB	Ceramic 1000PF +20% -20% 50V	C503	ECEA16V10L	Electrolytic 10UF 16V
C119	ECDI1H470J	Ceramic 47PF +5% -5% 50V	C504	ECEA10V100L	Electrolytic 100UF 10V
C20	ECKW1H103PF	0.01UF +100% -0% 50V	C508	ECEA16V1000E	Electrolytic 1000UF 16V
C21	ECKW1H102MB	Ceramic 1000PF +20% -20% 50V	C509	ECEA10V33L	Electrolytic 33UF 10V
C22	ECDI1H680K	Ceramic 68PF +10% -10% 50V	C510	ECDI1H102MB	Ceramic 1000PF +50% -50% 50V
C123	ECDI1H102MB	Ceramic 1000PF +20% -20% 50V	R101	ERD14TJ220	Carbon 200Ohm +5% -5% 1W
C131	ECEA16V30J	Electrolytic 330UF 16V	R102	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W
C132	ECKW1H103PF	Ceramic 0.01UF +100% -0% 50V	R104	ERD14TJ821	Carbon 820Ohm +5% -5% 1W
C133	ECEA16V220L	Electrolytic 220UF 16V	R105	ERD14TJ103	Carbon 10KOhm +5% -5% 1W
C134	ECKD1H102MB	Ceramic 1000PF +20% -20% 50V	R106	ERD14TJ391	Carbon 390Ohm +5% -5% 1W
C135	ECDI1H102MB	Ceramic 1000PF +20% -20% 50V	R107	ERD14TJ561	Carbon 560Ohm +5% -5% 1W
C136	ECEA16Z220E	Electrolytic 220UF 16V			
C140	EQM05152KZ	Polyester 1500PF +10% -10% 50V			
		RESISTORS			
			R101	ERD14TJ220	Carbon 200Ohm +5% -5% 1W
			R102	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W
			R104	ERD14TJ821	Carbon 820Ohm +5% -5% 1W
			R105	ERD14TJ103	Carbon 10KOhm +5% -5% 1W
			R106	ERD14TJ391	Carbon 390Ohm +5% -5% 1W
			R107	ERD14TJ561	Carbon 560Ohm +5% -5% 1W

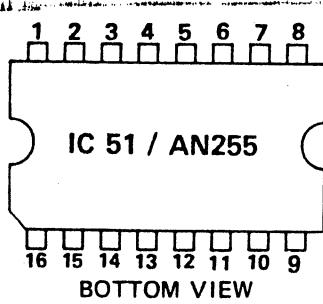
REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION	REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION	REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION
R131	ERD14FJ100	Carbon 100Ohm +5% -5% 1W	R132	ERD14FJ220	Carbon 220Ohm +5% -5% 1W	R133	ERD14FJ270	Carbon 270Ohm +5% -5% 1W
R132	ERD14FJ220	Carbon 680Ohm +5% -5% 1W	R143	ERD14TJ680	Carbon 3900Ohm +5% -5% 1W	R144	ERD14TJ151	Carbon 1.2KOhm +5% -5% 1W
R143	ERD14TJ680	Carbon 3.3KOhm +5% -5% 1W	R144	ERD14TJ122	Carbon 1.2KOhm +5% -5% 1W	R501	ERD14TJ151	Carbon 1500Ohm +5% -5% 1W
R144	ERD14TJ122	Carbon 820Ohm +5% -5% 1W	R145	ERD14TJ820	Carbon 820Ohm +5% -5% 1W	R502	ERD14TJ223	Carbon 22KOhm +5% -5% 1W
R145	ERD14TJ820	Carbon 560KOhm +5% -5% 1W	R147	ERD14TJ564	Carbon 3.3KOhm +5% -5% 1W	R503	ERD14FJ220	Carbon 220Ohm +5% -5% 1W
R147	ERD14TJ564	Carbon 3.3KOhm +5% -5% 1W	R148	ERD14TJ332	Carbon 6.8KOhm +5% -5% 1W	R504	ERD14TJ182	Carbon 1.8KOhm +5% -5% 1W
R148	ERD14TJ332	Carbon 6.8KOhm +5% -5% 1W	R150	ERD14TJ682	Carbon 47KOhm +5% -5% 1W	R581	ERD14TJ150	Carbon 560Ohm +5% -5% 1W
R150	ERD14TJ682	Carbon 47KOhm +5% -5% 1W	R151	ERD14TJ473	Carbon 47KOhm +5% -5% 1W	R601	ERD14TJ152	Carbon 1.5KOhm +5% -5% 1W
R151	ERD14TJ473	Carbon 47KOhm +5% -5% 1W	R152	ERD12GK335	Solid 3.30MOhm +10% -10% 1W	R603	ERD14TJ473	Carbon 47KOhm +5% -5% 1W
R152	ERD12GK335	Solid 3.30MOhm +10% -10% 1W	R153	ERD14TJ682	Carbon 2.7KOhm +5% -5% 1W			
R153	ERD14TJ682	Carbon 2.7KOhm +5% -5% 1W	R154	ERD14TJ333	Carbon 33KOhm +5% -5% 1W			
R154	ERD14TJ333	Carbon 33KOhm +5% -5% 1W	R155	ERD14TJ564	Carbon 560KOhm +5% -5% 1W			
R155	ERD14TJ564	Carbon 560KOhm +5% -5% 1W	R156	ERD14TJ122	Carbon 27KOhm +5% -5% 1W			
R156	ERD14TJ122	Carbon 27KOhm +5% -5% 1W	R164	ERD14TJ274	Carbon 270KOhm +5% -5% 1W			
R164	ERD14TJ274	Carbon 270KOhm +5% -5% 1W	R165	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W			
R165	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W	R181	ERD14TJ333	Carbon 33KOhm +5% -5% 1W			
R181	ERD14TJ333	Carbon 33KOhm +5% -5% 1W	R182	ERD14TJ564	Carbon 560KOhm +5% -5% 1W			
R182	ERD14TJ564	Carbon 560KOhm +5% -5% 1W	R183	ERD14TJ822	Carbon 8.2KOhm +5% -5% 1W			
R183	ERD14TJ822	Carbon 8.2KOhm +5% -5% 1W	R184	ERD14TJ331	Carbon 330Ohm +5% -5% 1W			
R184	ERD14TJ331	Carbon 330Ohm +5% -5% 1W	R185	ERD14TJ103	Carbon 10KOhm +5% -5% 1W			
R185	ERD14TJ103	Carbon 10KOhm +5% -5% 1W	R186	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W			
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R189	ERD14TJ222	Carbon 2.2KOhm +5% -5% 1W	R190	ERD14TJ472	Carbon 4.7KOhm +5% -5% 1W			
R190	ERD14TJ472	Carbon 4.7KOhm +5% -5% 1W	R201	ERD14FJ220	Carbon 220Ohm +5% -5% 1W			
R201	ERD14FJ220	Carbon 220Ohm +5% -5% 1W	R202	ERD14FJ272	Carbon 2.7KOhm +5% -5% 1W			
R202	ERD14FJ272	Carbon 2.7KOhm +5% -5% 1W	R203	ERD14FJ472	Carbon 4.7KOhm +5% -5% 1W			
R203	ERD14FJ472	Carbon 4.7KOhm +5% -5% 1W	R301	ERD14TJ472	Carbon 4.7KOhm +5% -5% 1W			
R301	ERD14TJ472	Carbon 4.7KOhm +5% -5% 1W	R302	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W			
R302	ERD14TJ272	Carbon 2.7KOhm +5% -5% 1W	R303	ERD14TJ183	Carbon 18KOhm +5% -5% 1W			
R303	ERD14TJ183	Carbon 18KOhm +5% -5% 1W	R304	ERD14TJ823	Carbon 820Ohm +5% -5% 1W			
R304	ERD14TJ823	Carbon 820Ohm +5% -5% 1W	R305	ERD14TJ472	Carbon 4.7KOhm +5% -5% 1W			
R305	ERD14TJ472	Carbon 4.7KOhm +5% -5% 1W	R315	ERD14TJ820	Carbon 820Ohm +5% -5% 1W			
R315	ERD14TJ820	Carbon 820Ohm +5% -5% 1W	R316	ERD14TJ152	Carbon 1.5KOhm +5% -5% 1W			
R316	ERD14TJ152	Carbon 1.5KOhm +5% -5% 1W	R317	ERD14TJ333	Carbon 33KOhm +5% -5% 1W			
R317	ERD14TJ333	Carbon 33KOhm +5% -5% 1W	R319	ERD14TJ100	Carbon 100Ohm +5% -5% 1W			
R319	ERD14TJ100	Carbon 100Ohm +5% -5% 1W	R320	ERD14TJ821	Carbon 820Ohm +5% -5% 1W			
R320	ERD14TJ821	Carbon 820Ohm +5% -5% 1W	R321	ERD14TJ471	Carbon 4700Ohm +5% -5% 1W			
R321	ERD14TJ471	Carbon 4700Ohm +5% -5% 1W	R322	ERD14FJ2R2	Carbon 2.20Mh +5% -5% 1W			
R322	ERD14FJ2R2	Carbon 2.20Mh +5% -5% 1W	R324	ERD14FJ2R2	Carbon 2.20Mh +5% -5% 1W			
R324	ERD14FJ2R2	Carbon 2.20Mh +5% -5% 1W	R325	ERD14TJ821	Carbon 820Ohm +5% -5% 1W			
R325	ERD14TJ821	Carbon 820Ohm +5% -5% 1W	R326	ERD14TJ152	Carbon 1.5KOhm +5% -5% 1W		</	

REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION
RESISTORS		
01	ERD14TJ122	Carbon 1.2KOhm +5%-5% 1/4W
02	ERD14TJ821	Carbon 820Ohm +5%-5% 1/4W
03	ERD14TJ151	Carbon 150Ohm +5%-5% 1/4W
05	ERC12GK39T	Solid 390Ohm +10%-10% 1/4W
07	ERD14TJ221	Carbon 220Ohm +5%-5% 1/4W
08	ERD14TJ153	Carbon 15KOhm +5%-5% 1/4W
11	TERM12PKR47	Resin Coated 0.47Ohm 1/4W
12	ERD12FJ220	Carbon 220Ohm +5%-5% 1/4W
14	ERD12TJ681	Carbon 680Ohm +5%-5% 1/4W
21	ERD14TJ222	Carbon 2.2KOhm +5%-5% 1/4W
22	ERD14TJ433	Carbon 43KOhm +5%-5% 1/4W
23	ERD14TJ223	Carbon 22KOhm +5%-5% 1/4W
24	ERD14TJ224	Carbon 5.6KOhm +5%-5% 1/4W
25	ERD14TJ100	Carbon 10Ohm +5%-5% 1/4W
26	ERD14TJ103	Carbon 10KOhm +5%-5% 1/4W
27	ERD12TJ201	Carbon 200Ohm +5%-5% 1/4W
28	TRF2SK1R0	Non-Flame 1Ohm 2W
31	ERTD2FHL332	Thermistor 3.3KOhm 2W
32	ERD14TJ332	Carbon 3.3KOhm +5%-5% 1/4W
33	ERD14TJ223	Carbon 22KOhm +5%-5% 1/4W
34	ERD14TJ123	Carbon 12KOhm +5%-5% 1/4W
R735	ERD14TJ682	Carbon 6.8KOhm +5%-5% 1/4W
R736	ERD14TJ103	Carbon 10KOhm +5%-5% 1/4W
R737	ERD14TJ472	Carbon 4.7KOhm +5%-5% 1/4W
R738	ERD14TJ123	Carbon 12KOhm +5%-5% 1/4W
R739	ERD14TJ102	Carbon 1KOhm +5%-5% 1/4W
R741	ERC12ZGK185	Solid 1.8MOhm +10%-10% 1/4W
VR71	EVL50AA00823	AVR
VR72	EVL50AA00814	ACP
VR73	EVL50AA00853	ADP
FUSES		
111	XBA2F04NU100	AC 0.4A Fuse
112	XBA2F10NU100	DC 1A Fuse
113	XBATET6NU100	DC 1.6A Fuse
SOCKET & SWITCHES		
114	TJS869080	AC/DC Socket
115	TSE80606	Pop up-Switch
116	TSE80704	Power Switch
BRACKET & SCREWS		
117	TUC80709	Heat Think
	XTV3+8B	TR73, Mounting Screw
	XSB3+10S	TR79, Mounting Screw
	XNG38S	TR79, Mounting Nut
	XWA3B	TR79, Mounting Washer

SCHEMATIC DIAGRAM FOR MODE

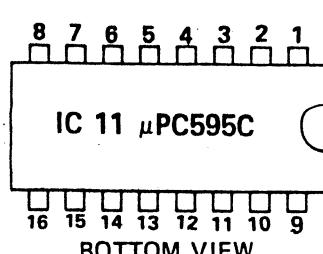


IC TERMINAL INFORMATION

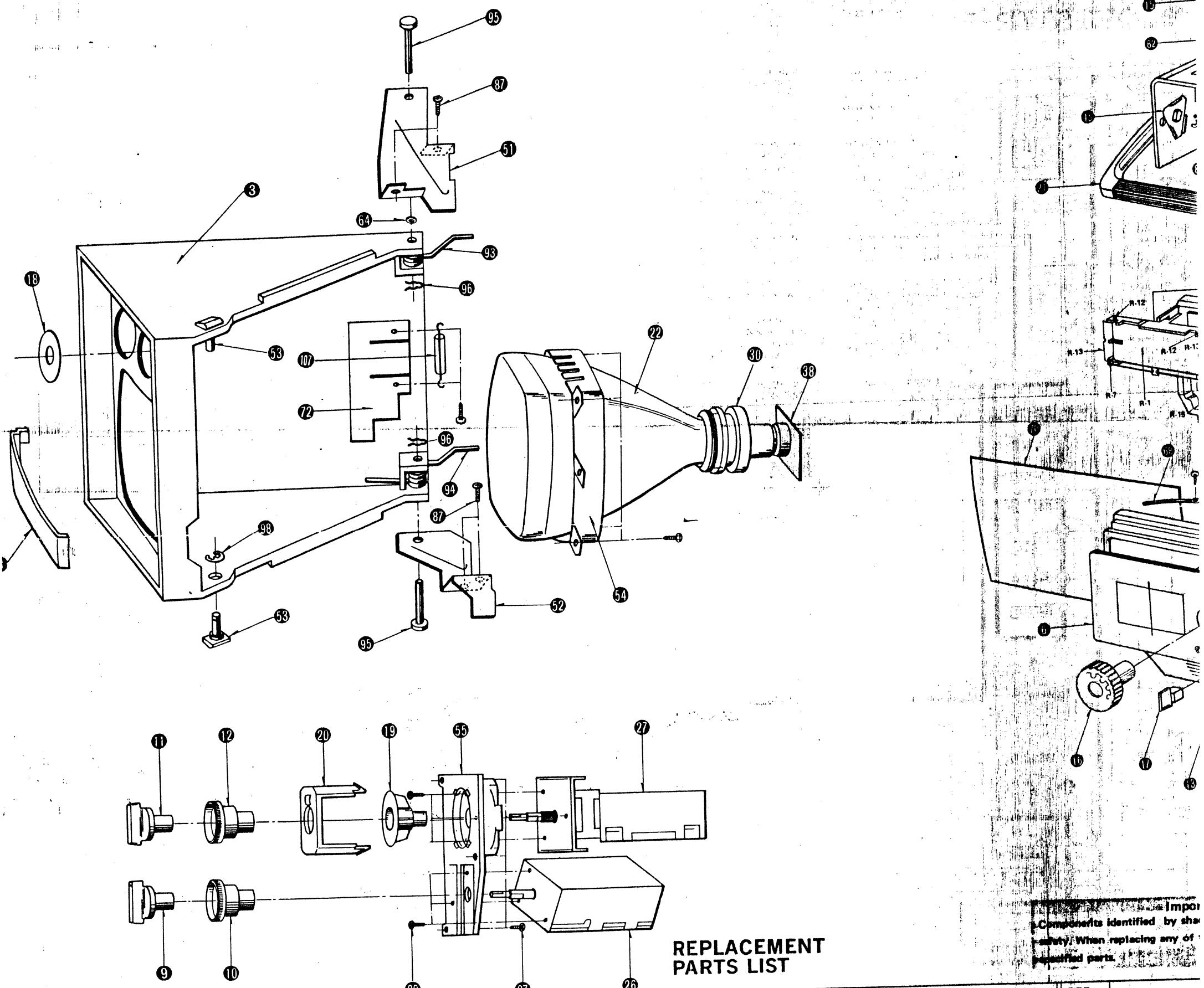


TRANSISTOR BASE INFORMATION

LOCATION	     		
PARTS NAME	2SC717	2SC683	2SC1025MT
       			
2SA564A 2SC564A 2SC5628A 2SC1317	2SA719 2SC828A 2SC1318	2SC1226A	2SC1566
			2SD389



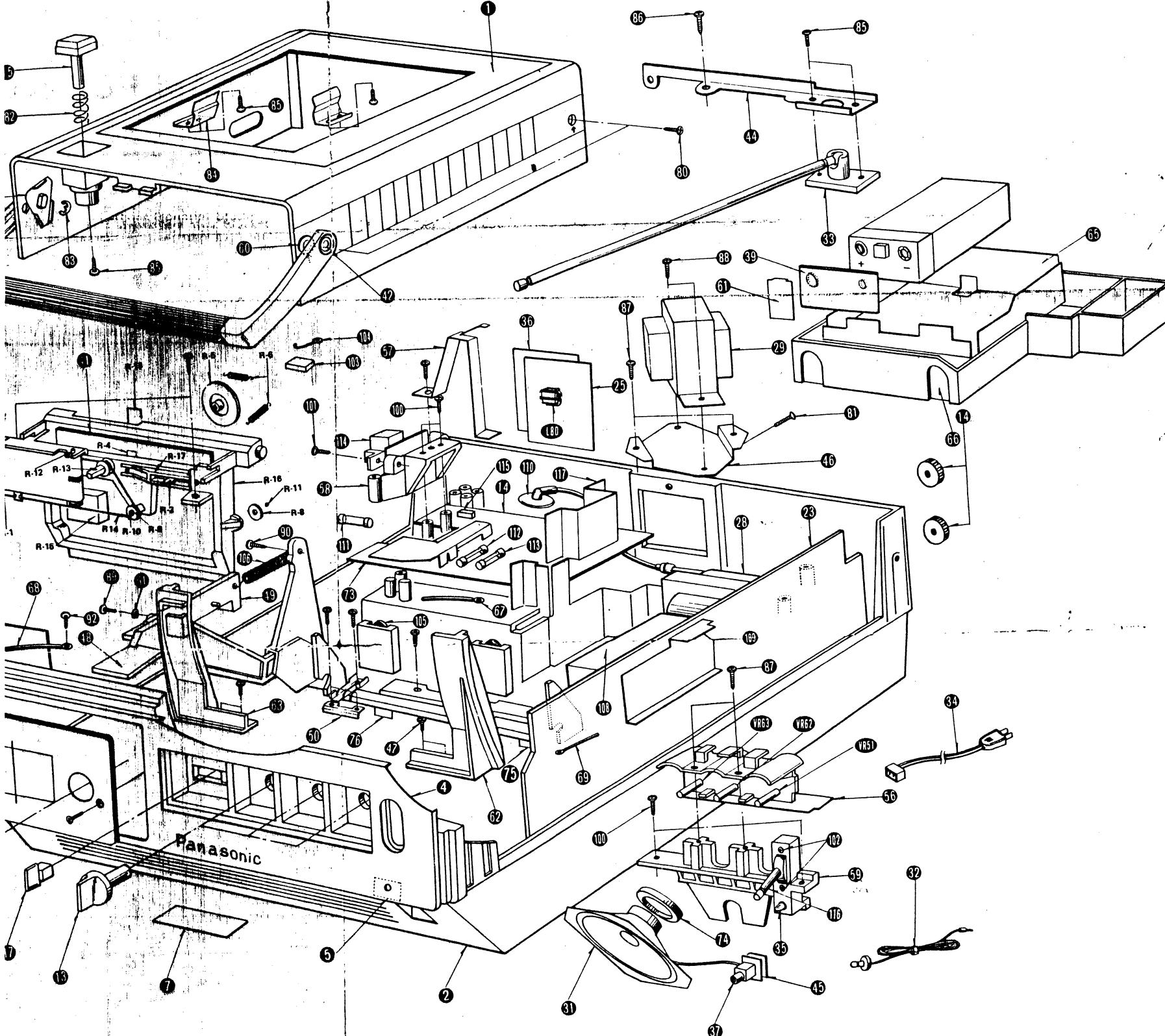
—EXPLODED VIEW—



REPLACEMENT PARTS LIST

Components identified by shaded area: When replacing any of these parts, use new parts.

REF. NO.	PARTS NO.	PARTS NAME & DESCRIPTION	REF. NO.	PARTS NO.
CABINET PARTS				
1	TKY802301	Upper Cabinet	30	TLY80104T
2	TKY802101-1H (TR-535)	Under Cabinet Complete	31	EAS85P02AA
2	TKY802101-2H (TR-535C)	Under Cabinet Complete	32	EAE3YDAA
3	TKY802201-1H	Escutcheon Complete	33	TSA141-1S
4	TKP8052751	Aluminum Panel	34	TSX8138
5	TKK39317	Lamp Indicator Plate	35	XAM21C025
6	TKP8011591-1	Radio Transparent Plate	36	TJB802425
7	TBM82628-1 (TR-535)	Model Plate	37	TJS869070
7	TBM82643 (TR-535C)	Model Plate	38	TJS25640
8	TKG809638	Front Glass	39	TLR809318
9	TBX80765	VHF Channel Knob	40	TJB80906-1
10	TBX80758-1	VHF Fine Tuning	41	TPC803271
11	TBX80759	UHF Channel Knob	42	(TR-535)
12	TBX80757-1	UHF Fine Tuning	43	TPC803211
13	TBX80581-1	Small Knob	44	(TR-535C)
14	TBX80583-1	Vert./Horiz. Knob	45	XAPD01535
15	TKK809810	Pop-up Button	46	TPE84023
16	TBX80582	Radio Tuning Dial Knob	47	TQB83494
17	TBX80557-3	Radio-TV Selector Knob	48	(TR-535)
18	TKP8010961	VHF Indicator Plate	49	TQB83508
19	TKK800357-4	UHF Indicator Plate	50	(TR-535C)
20	TKK800356	UHF Indicator Transparent Plate	51	TQB82494
21	TKK800226	Handle Complete	52	(TR-535)
22	140AKB4	Picture Tube	53	TQB82508
23	TNP81829-21	Main Circuit Board Complete	54	(TR-535C)
24	TNP81536-21	Power Circuit Board Complete	55	TQB82500
25	TNP81944-1H	U/V Signal Separator Circuit	56	TQD8112069-1
		Board Complete	57	(TR-535)
26	TNT4661E	VHF Tuner	58	TQD8111266-
27	TKN36911AE	UHF Tuner	59	(TR-535C)
28	TLF80805	Flyback Transformer	60	TQB32894P
29	TLP80284W "(TR-535)	Power Transformer	61	41
		Power Transformer		TNO8215
BRACKETS				
42	TKK809240			
43	TKZ800925Z			
44	TUW80977Z			
45	TMK81252			



Important Safety Notice
Components shaded in grey have special characteristics important for safety. When any of these components are replaced, use only manufacturer's recommended parts.

TS NO.	PARTS NAME & DESCRIPTION
80104T	Deflection Yoke
85P02AA	Speaker
3YDAA	Earphone
141-1S	Rod Antenna
8138	Power Cord
121C025	Pilot Lamp
30242S	Antenna Terminal Board Complete
69070	Earphone Socket
15640	Picture Tube Socket
809316	Balun Coil
30906-1	Battery Terminal Complete
803271	Outer Carton
TR-535)	Outer Carton
803321	Filler Complete
TR-535C)	Set Cover
84023	Fan Bag
83494	Fan Bag
TR-535)	Instruction Book
83508	Instruction Book
TR-535C)	Instruction Sheet
82494	Fact Tag
TR-535)	Fact Tag
382508	Battery Instruction Book
TR-535C)	FM/AM Radio Complete
382500	
38112069-8	
(TR-535)	
38111266	
(TR-535C)	
332894P	
Q821	
K809248	Handle Mounting Pin
Z800925Z	Handle Mounting Bracket
	Antenna Mounting Bracket

REF. NO.	PART NO.	PARTS NAME & DESCRIPTION	REF. NO.	PART NO.	PARTS NAME & DESCRIPTION
46	TUX80284C	Power Transformer Mounting Bracket	85	XTB4+12A	Antenna, Pop-up Button, Pop-up Block
47	TKX804101	Lock Shaft	86	XSB3+8S	Stopper Mounting Screw
48	TKX804201	Lock Shaft Arm			Antenna Terminal Bracket
49	TKX804301	Lock Shaft Arm Mounting Bracket	87	XTB4+15A	Mounting Screw
50	TKZ809916	Lock Shaft Holder	88	XTB4+8B	Power Circuit Board, Volume Block
51	TKZ809914C	Pop-up Block Mounting Bracket. (A)	89	XTB4+12A	Speaker Pop-up Block Mounting Screw
52	TKZ809915C	Pop-up Block Mounting Bracket. (B)	90	XTV3+6A	Power Transformer Mounting Screw
53	TKX804901	Lock Pin	91	XWG4	Lock Shaft Arm Mounting Screw
54	TKW80961-4 (TR-535)	Picture Tube Band	92	XTB4+15A	Lock Shaft Spring Mounting Screw
54	TUW80961-4 (TR-535C)	Picture Tube Band	93	TES8217	Lock Shaft Arm Mounting Washer
55	TKX803701	Tuner Mounting Bracket	94	TES8220	Radio Mounting Screw
56	TKX804601	Volume Mounting Bracket	95	TEL8116	Pop-up Spring (Right)
57	TES8123	Pop-up Switch Spring	96	TES8121	Pop-up Spring (Left)
58	TKX804401	Power Cord Socket Holder	97	XTB4+15A	Pop-up Block Mounting Shaft
59	TKX804501	Speaker Stopper	98	TES8126	Pop-up Block Holding Pin
60	TKK809239	Handle Bushing	99	XTV3+10B	Tuner Block Mounting Screw
61	TJC80310	Battery Terminal Plate	100	XTB3+12A	E-Ring
62	TKX803901	Picture Tube Variare Holder (A)	101	XTB4+12A	Tuner Mounting Screw
63	TKX804001	Picture Tube Variare Holder (B)	102	XSB3+6S	Speaker, Pop-up Block Mounting Screw
64	TKX804801	Shaft Cover	103	TJT8504M	Power Cord Socet Mounting Screw
65	TMK81941-1	Battery Spacer	TJT487	4P Coupler	Power Switch Mounting Screw
66	TMK81253	Battery Lead Mounting Bracket	TJT885	1P Coupler	4P Coupler
67	TMK81936	Power Circuit Board Lead	TJT8503M	1P Chip	1P Coupler
68	TMK81937	Mounting Bracket	TJT8505M	3P Coupler	5P Coupler
69	TMK81939	Radio Lead Mounting Bracket	TJT8707M	Coupler Terminal (Slender)	Coupler Terminal (Thick)
70	TMK81934	Main Circuit Board Lead Mounting Bracket	104	TES8218	Battery Terminal Spring
72	TMK82142-1	Picture Tube Barrier	105	TES8216	Lock Shaft Spring
73	TMK81940	Escutcheon Lead Spacer	106	TES8304	Lead Wire Mounting Spring
74	TMM81556	Speaker Mounting Rubber			
75	TMM81562	Cushion Rubber (A)			
76	TMM81563	Cushion Rubber (B)			
RESISTOR					
R91	ERC12ZGK185	Ceramic 3PF +0.25PF-0.25PF 500V			
CAPACITORS					
C91	ECCD2H030C	Solid 1.8MOhm +10%-10% 1/2W			
C92	ECCD2H102MB	Ceramic 1000PF +20%-20% 500V			
C93	ECCD2H020C	Ceramic 2PF +0.25PF-0.25PF 500V			
C94	ECCD2H020C	Ceramic 2PF +0.25PF-0.25PF 500V			
C95	ECCD2H010C	Ceramic -1PF +0.25PF-0.25PF 500V			

SCREWS, WASHERS & SPRING

80	XTB4+15AFC	Upper Cabinet Mounting Screw
81	XSS3+20FNKS	Antenna Terminal Mounting Screw
82	TES8215	Pop-up Bottom Spring
83	TFS8130	Handle "U" Ring